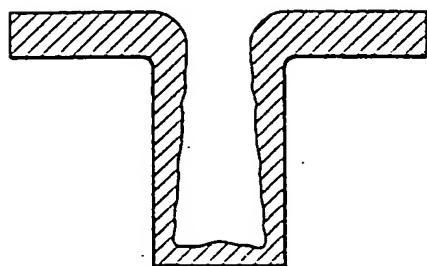


1 / 32

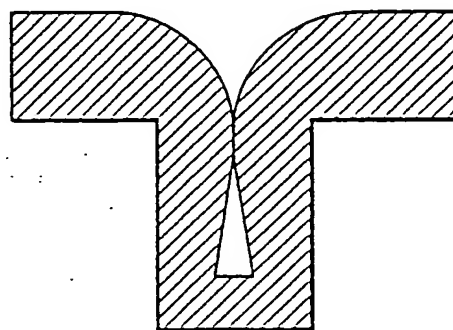
Fig. 1

Early Stages of Plating

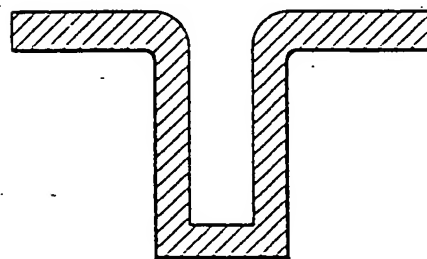
Late Stages of Plating



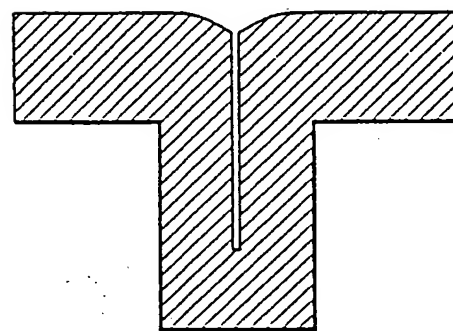
Anti-Conformal



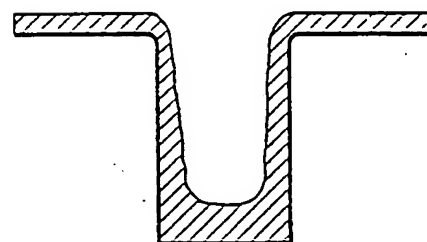
Void



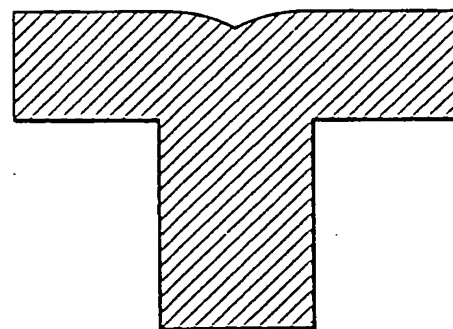
Conformal



Void



'Super-filling'

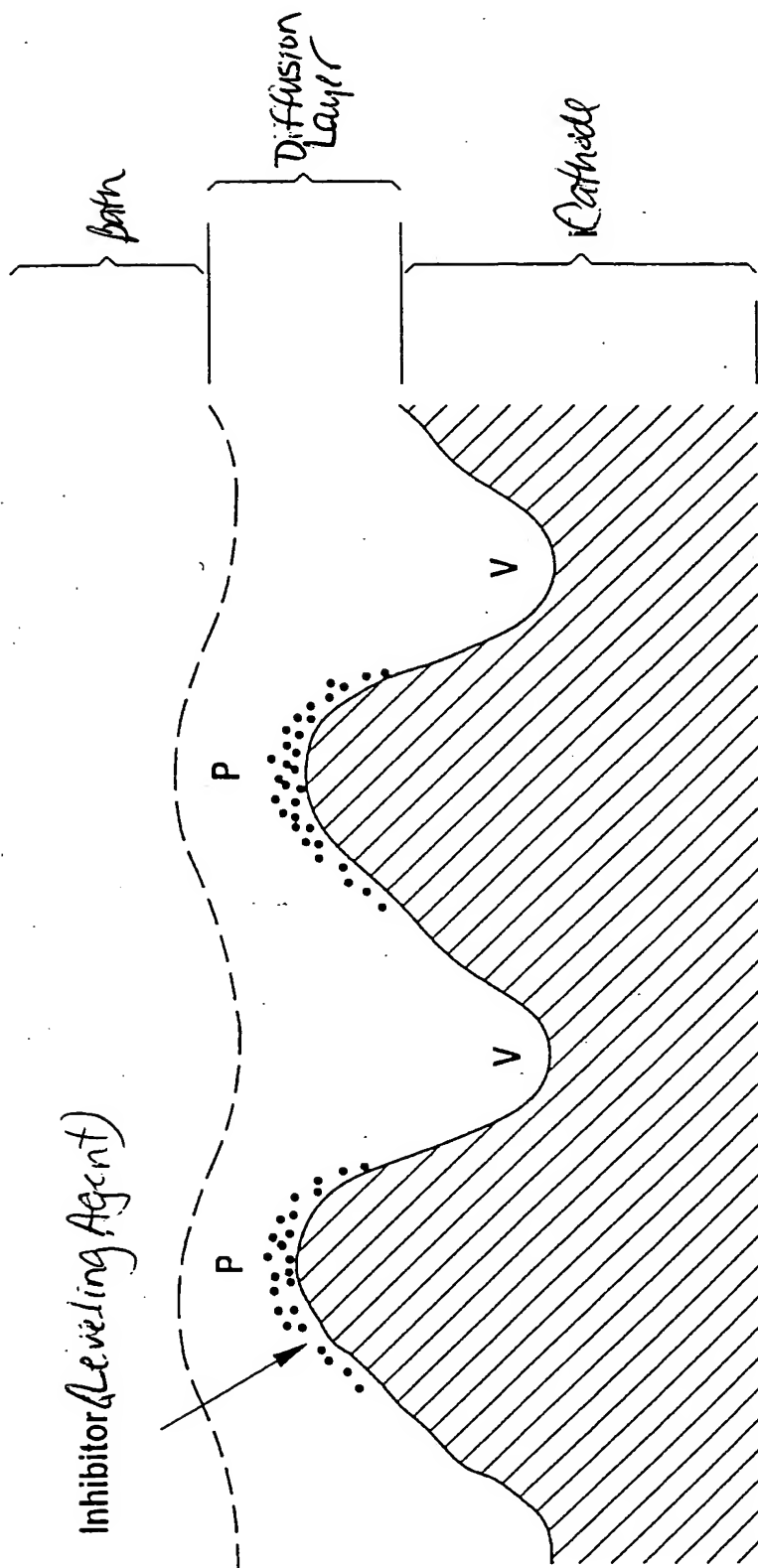


Defect-free

32pg  
42big

2 / 32

Fig. 2

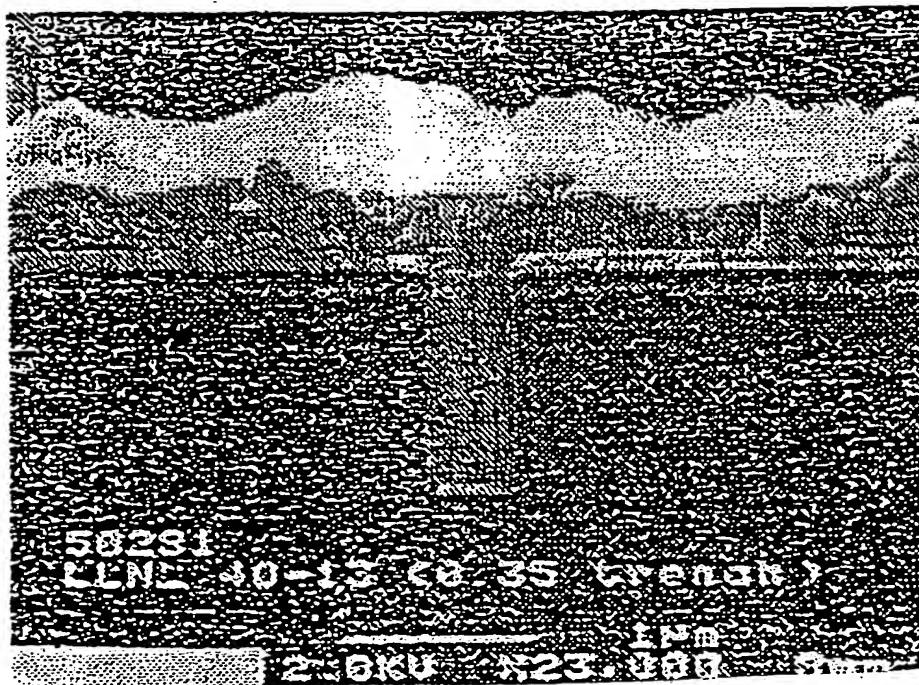


3 / 32

Fig. 3a



Fig. 3b



4/32

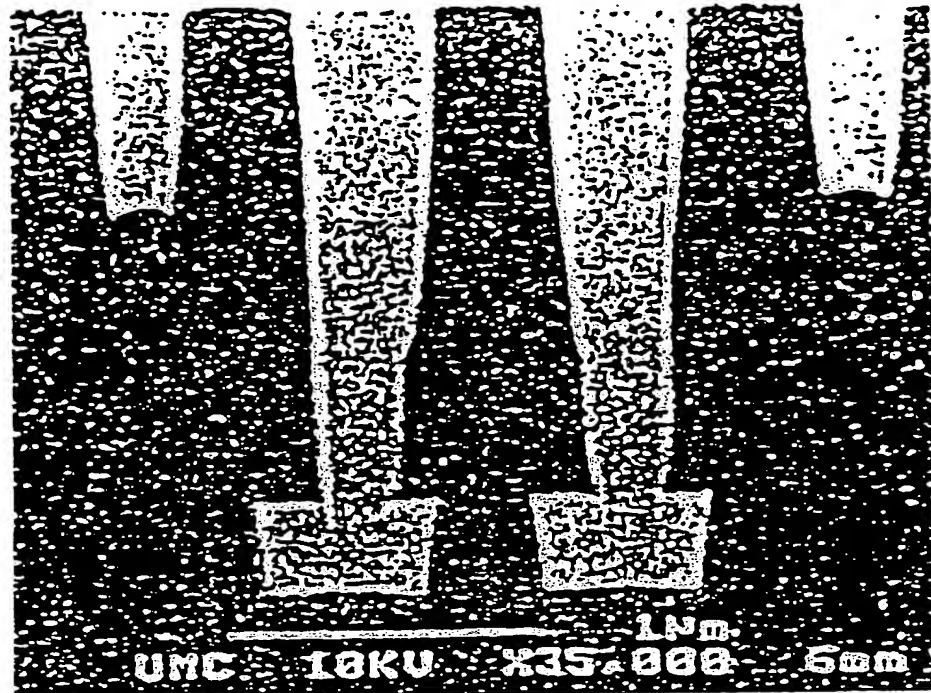
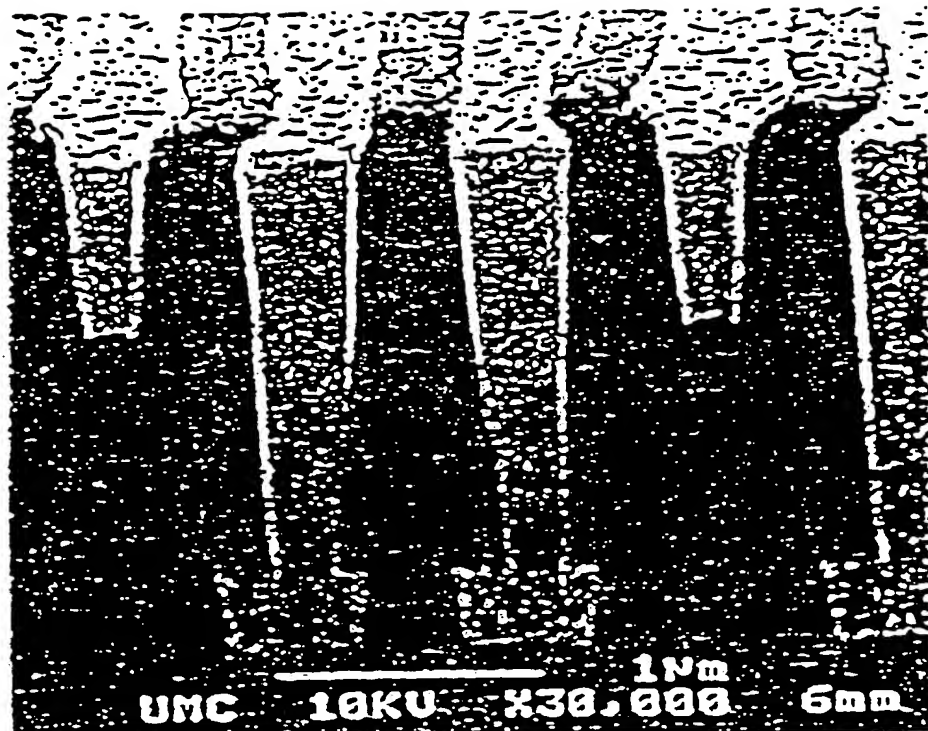


Fig. 4



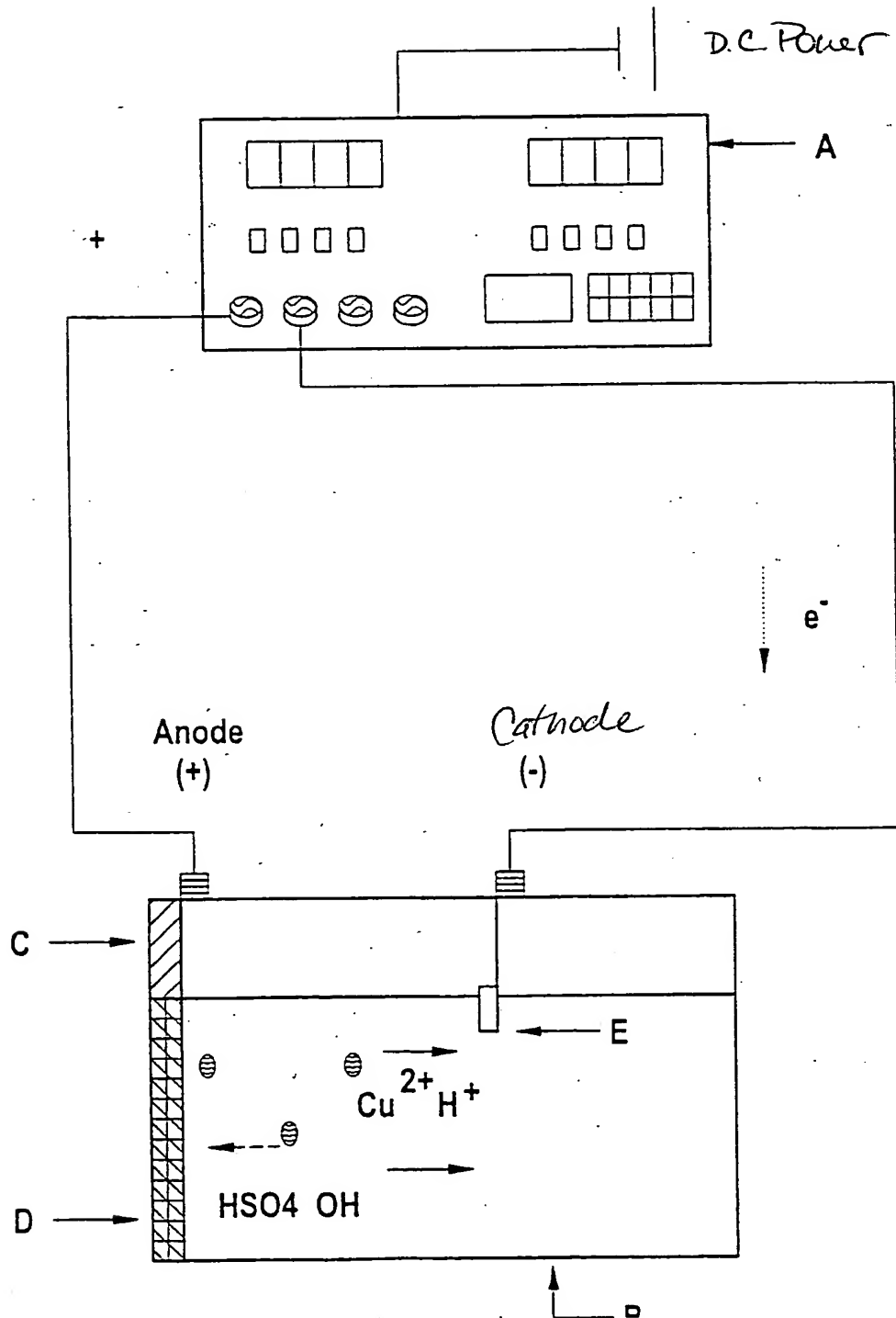
5 / 32

Fig. 5

A: Power Supplied  
D: Packed Copper

B: PP Tank  
E: Wafer

C: Ti - Anode Basket



6 / 32

Fig. 6

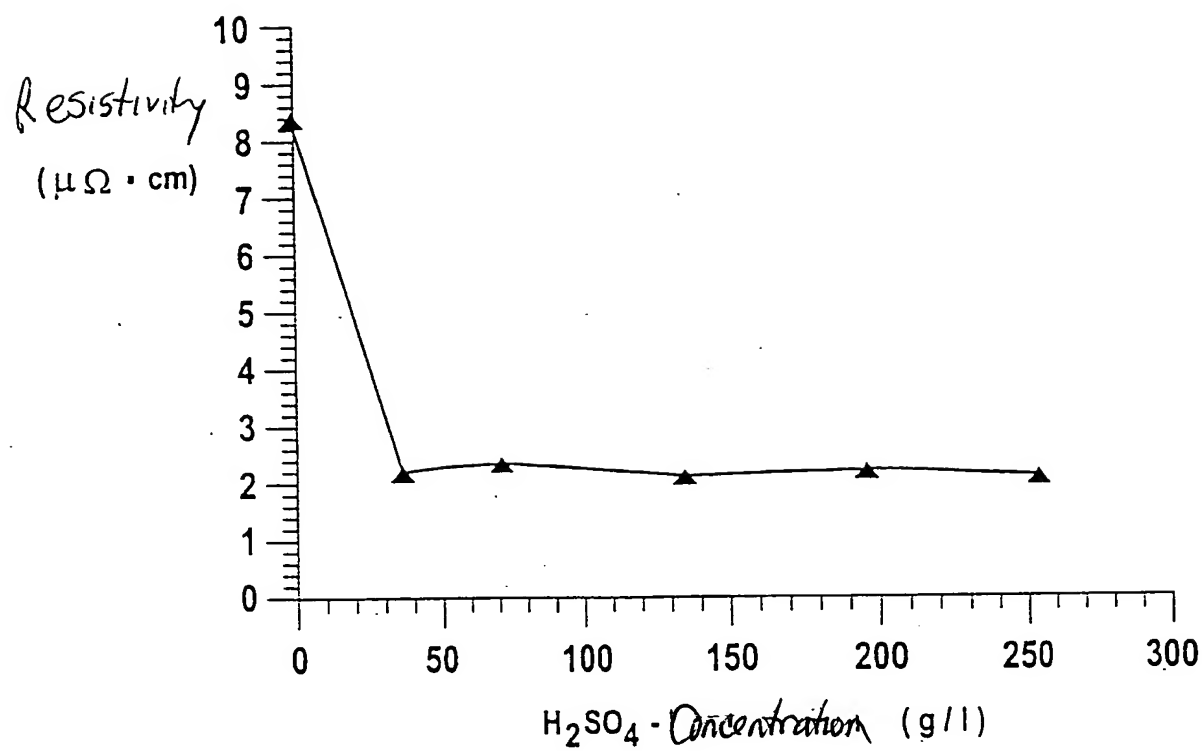
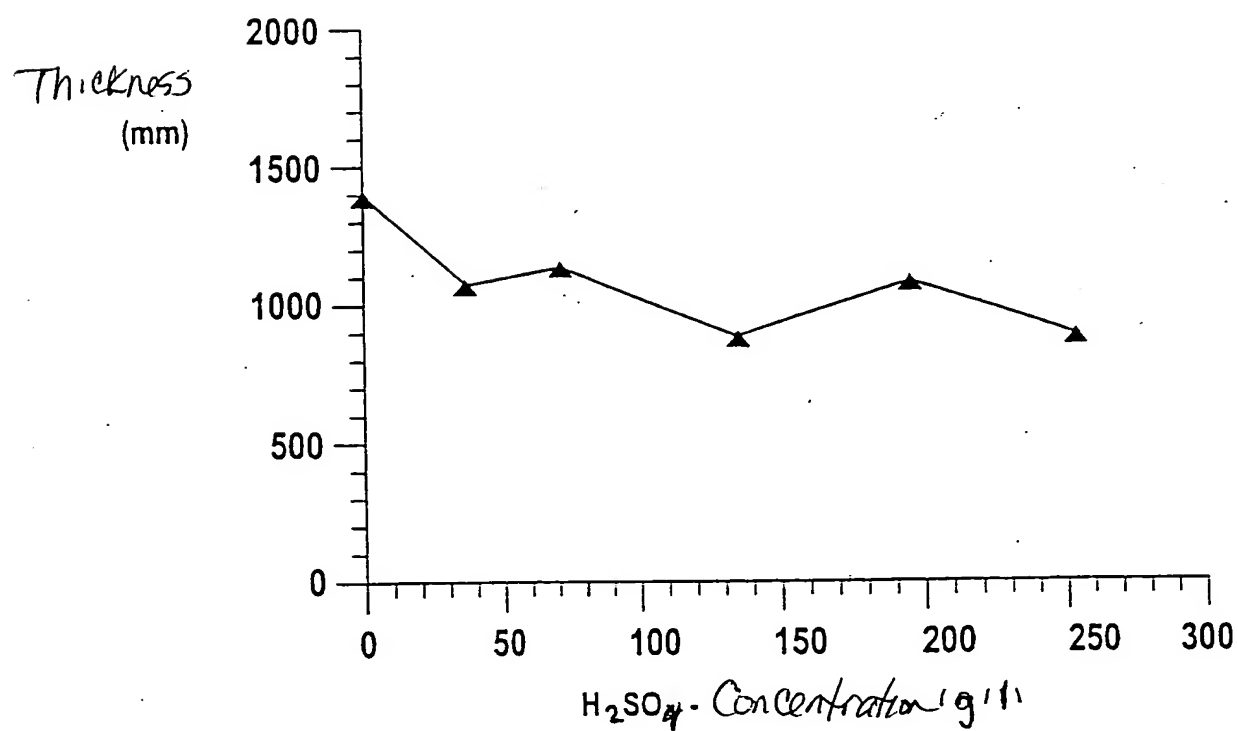


Fig. 7



7/32

Fig. 8a

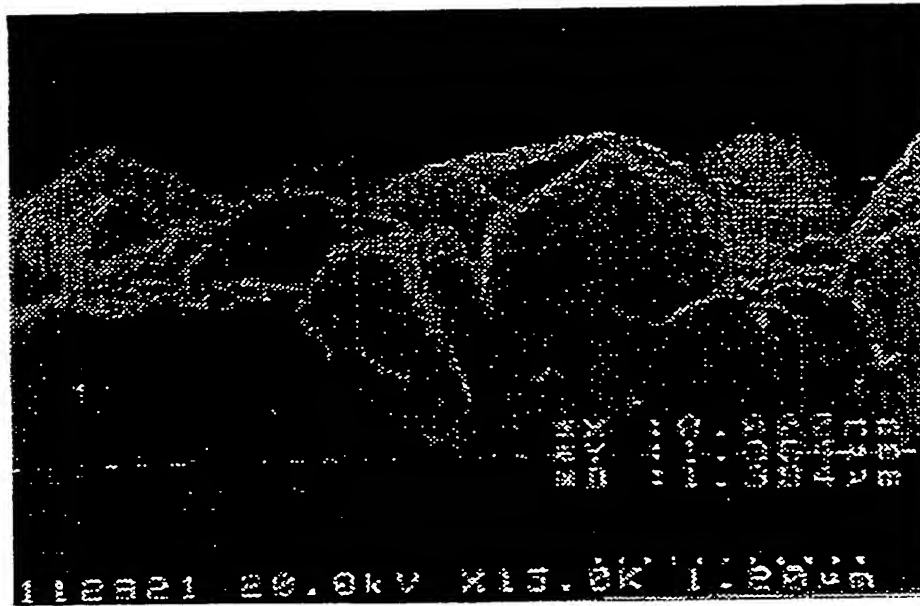
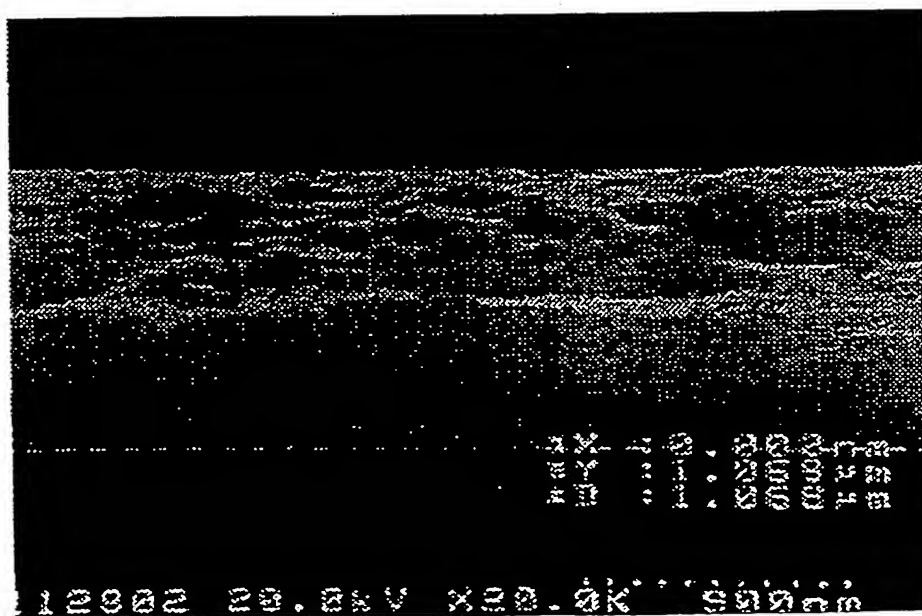


Fig. 8b



8 / 32

Fig. 9

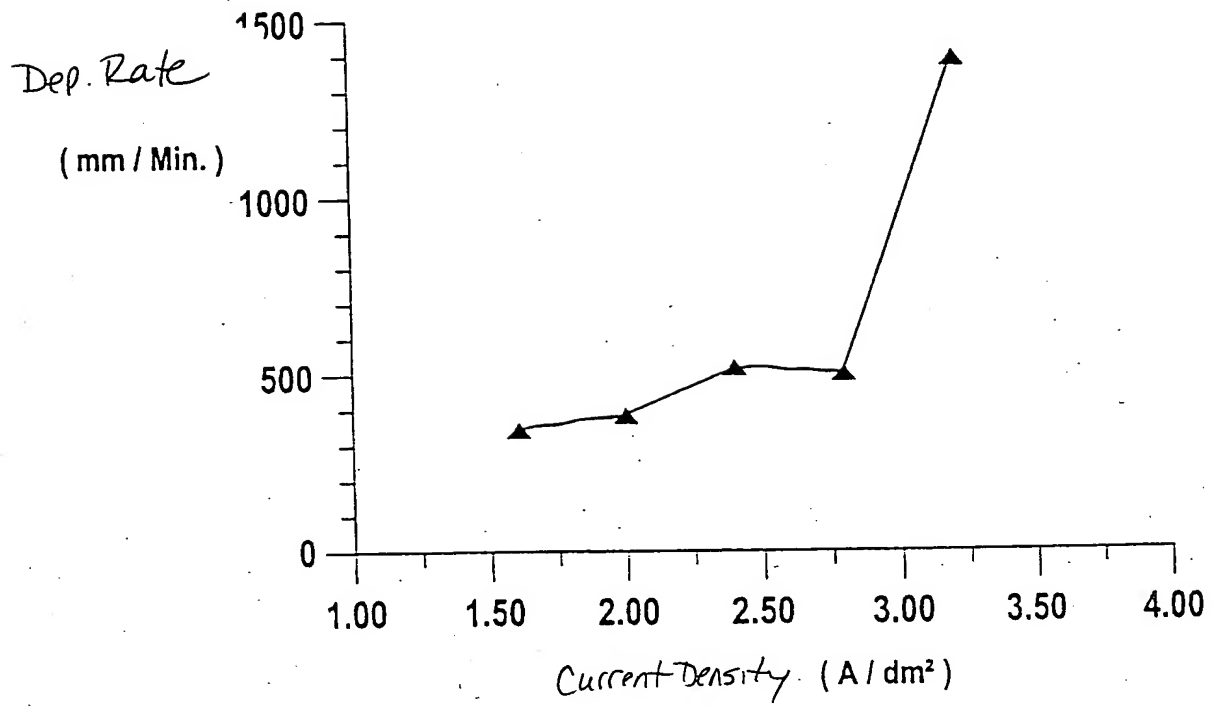
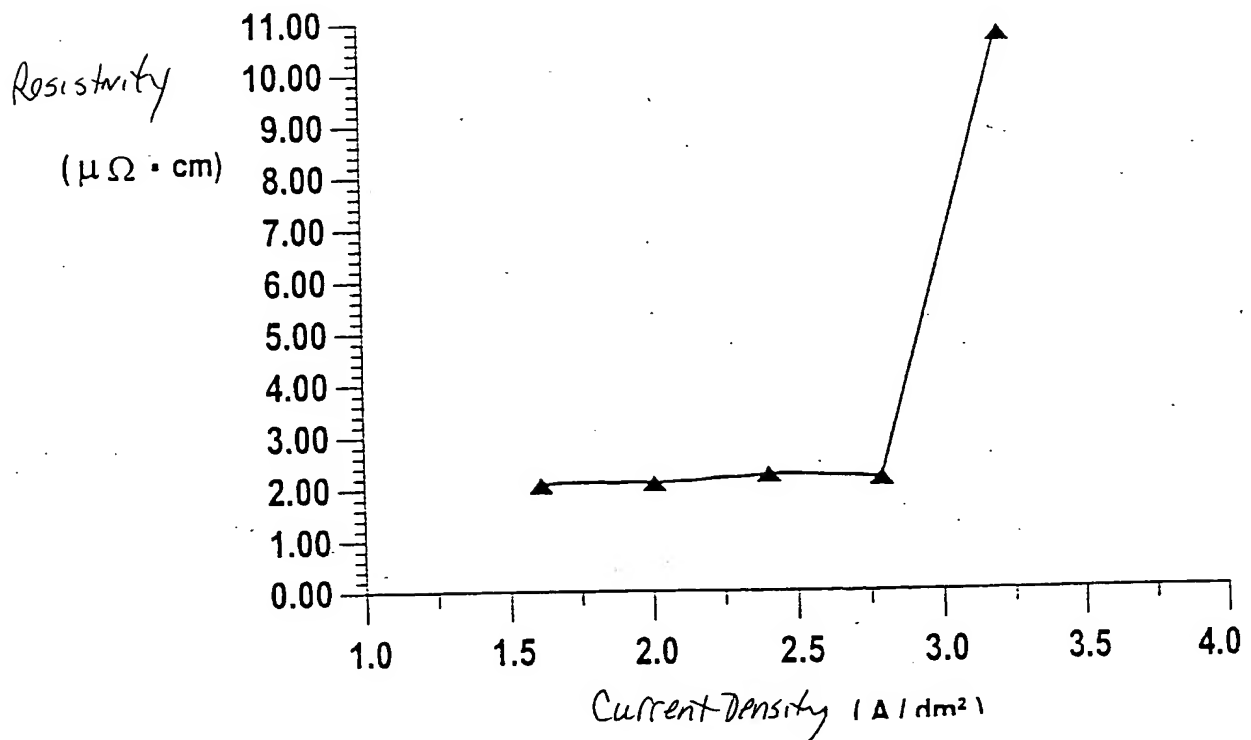


Fig. 10



9/32

Fig. 11a

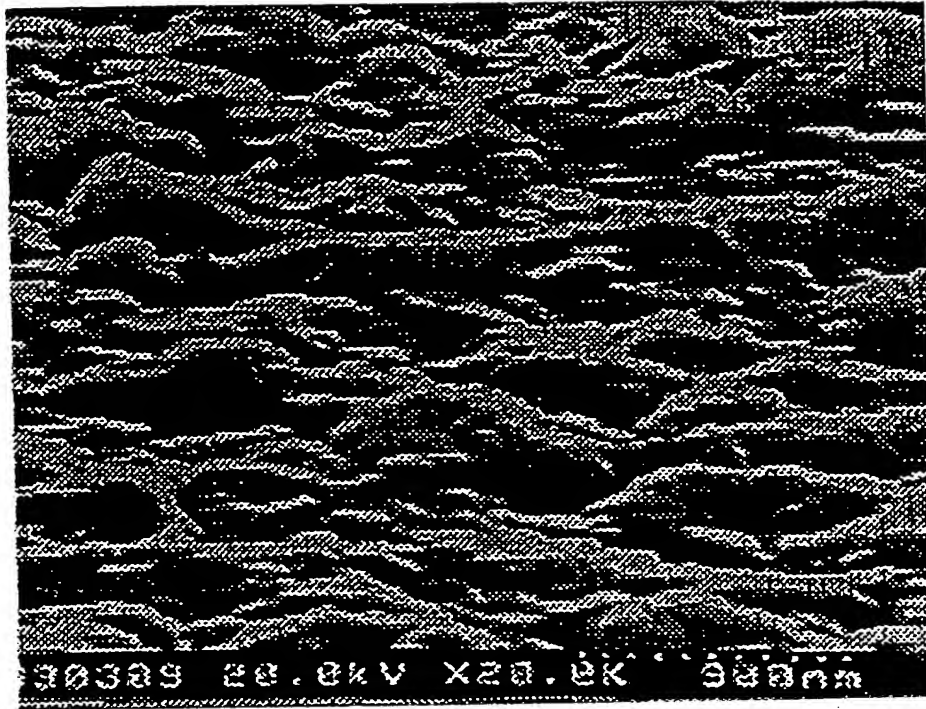
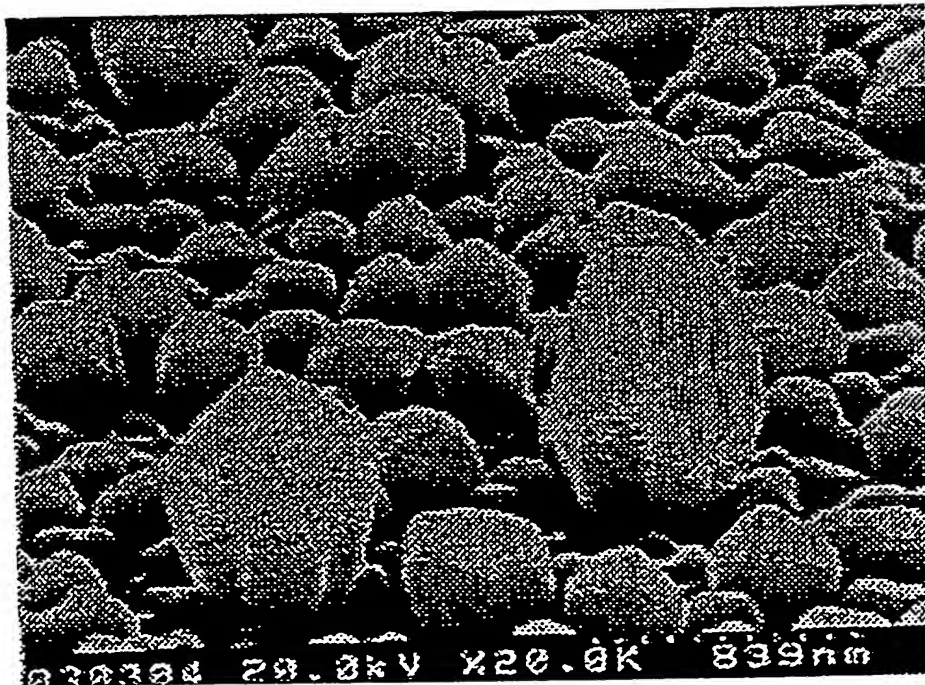
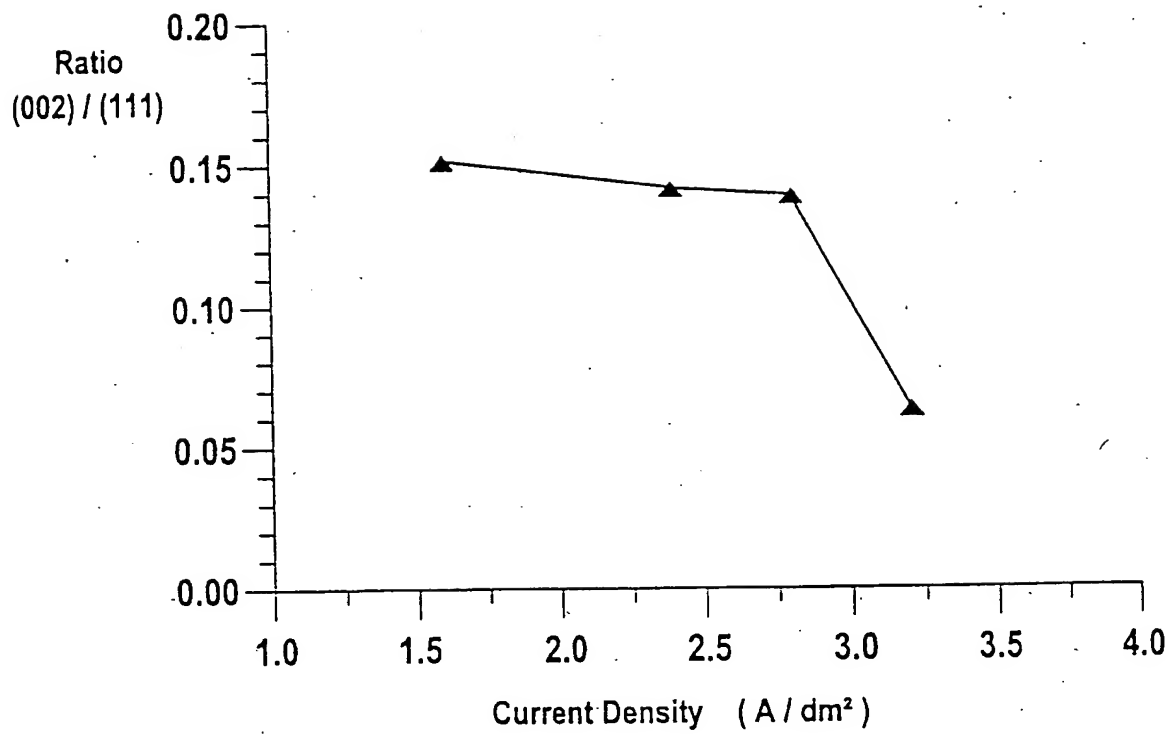
1.2 A/dm<sup>2</sup>

Fig. 11b

3.2 A/dm<sup>2</sup>

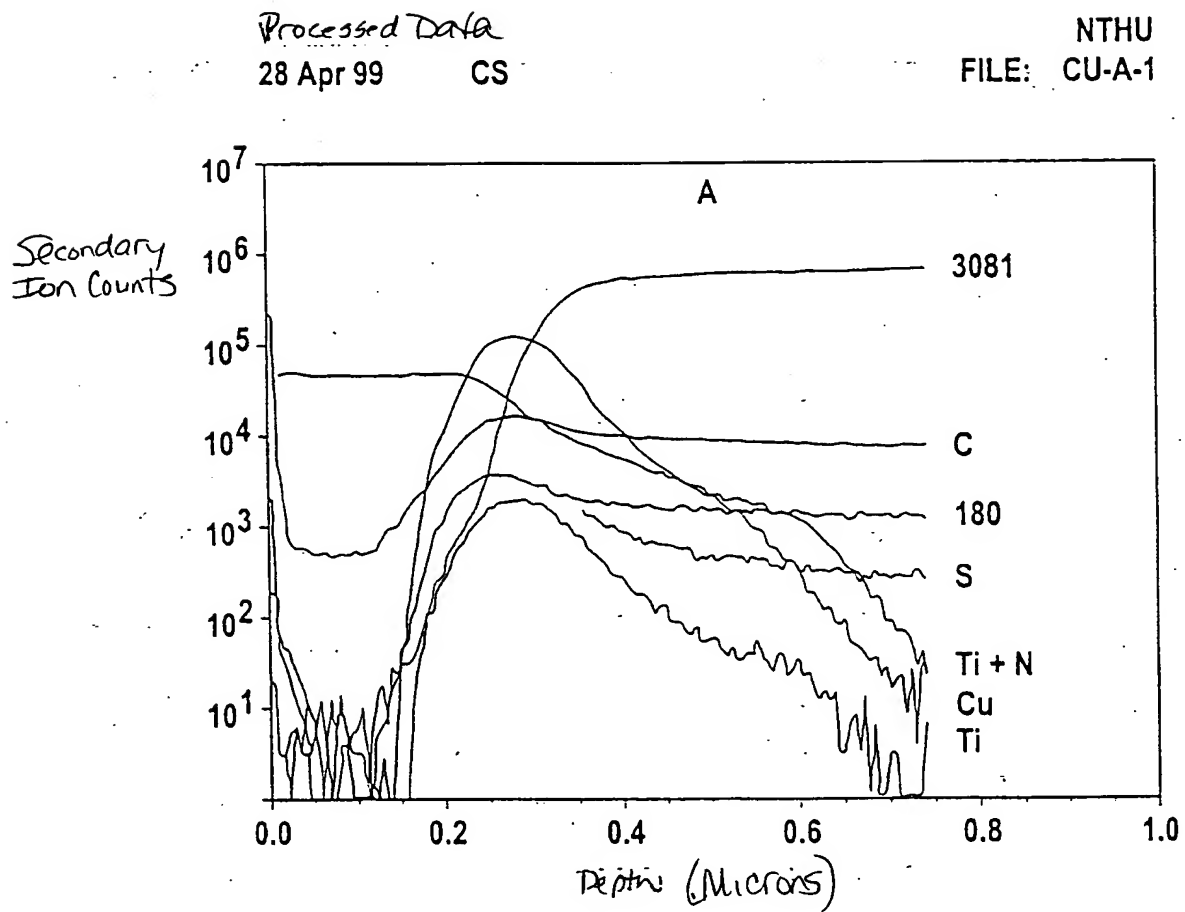
10 / 32

Fig. 12



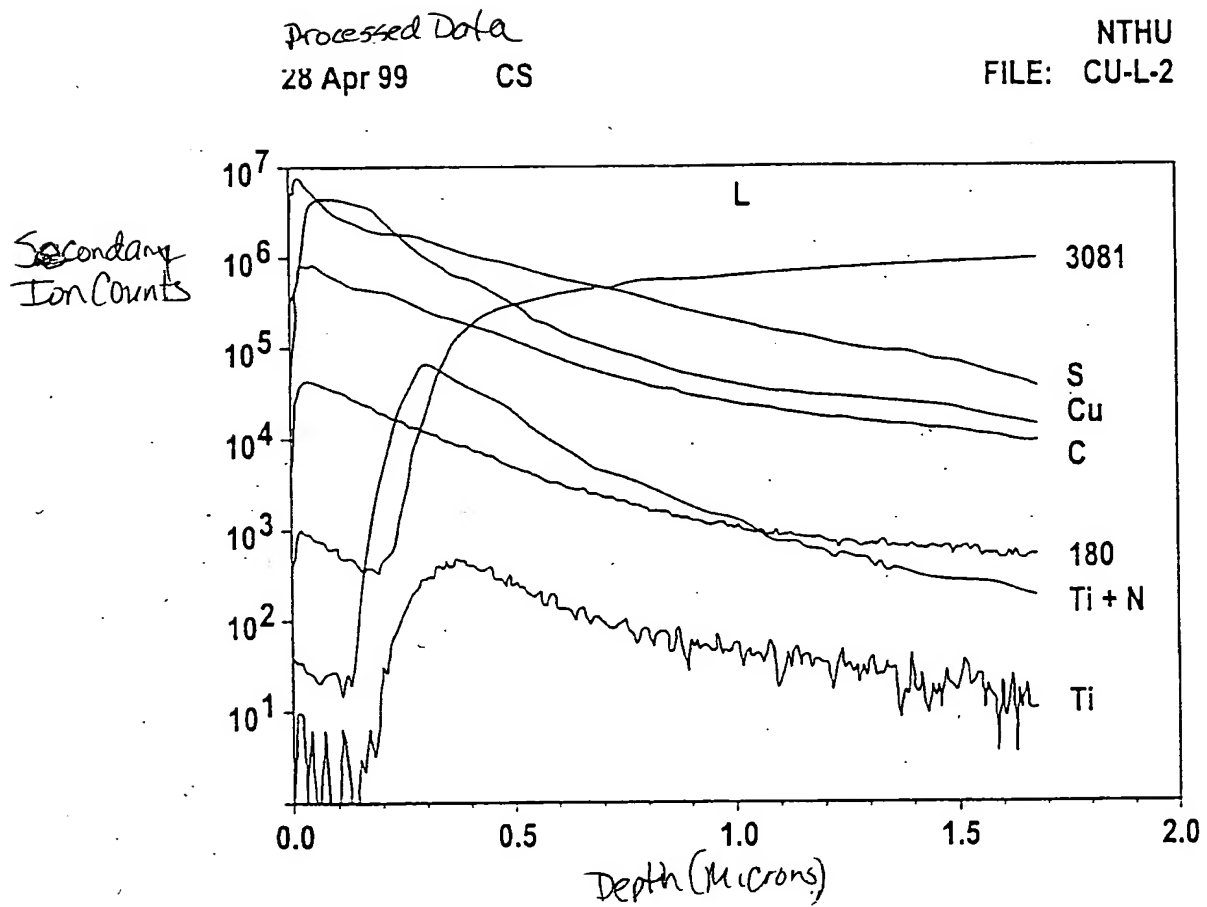
11 / 32

Fig. 13a



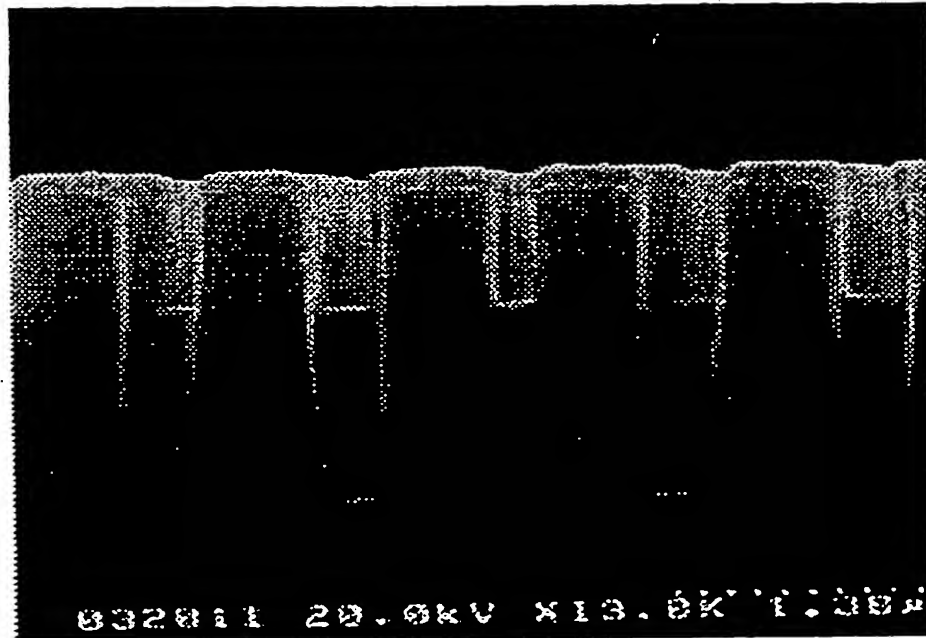
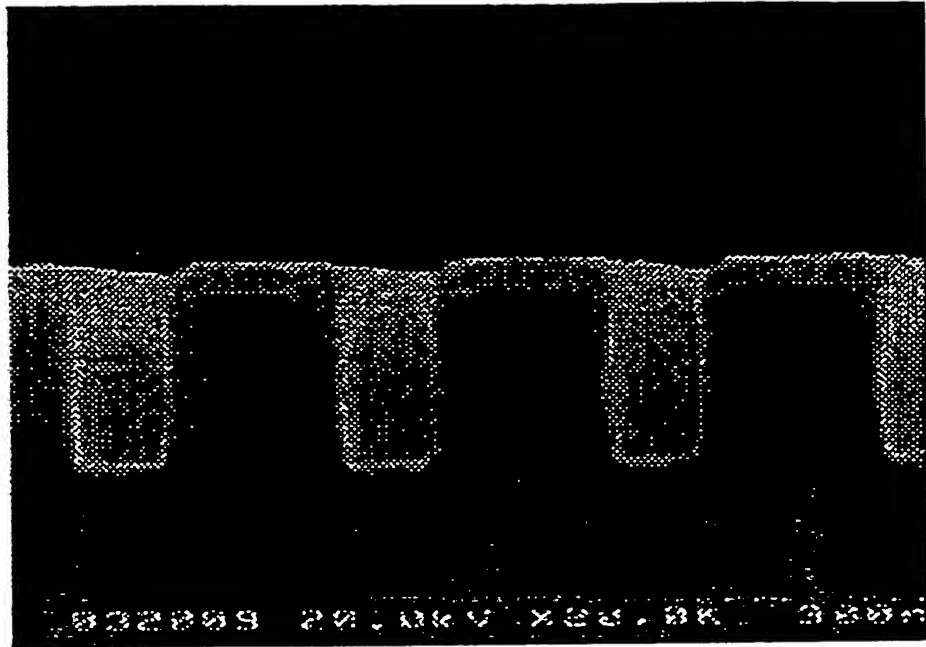
12 / 32

Fig. 13b



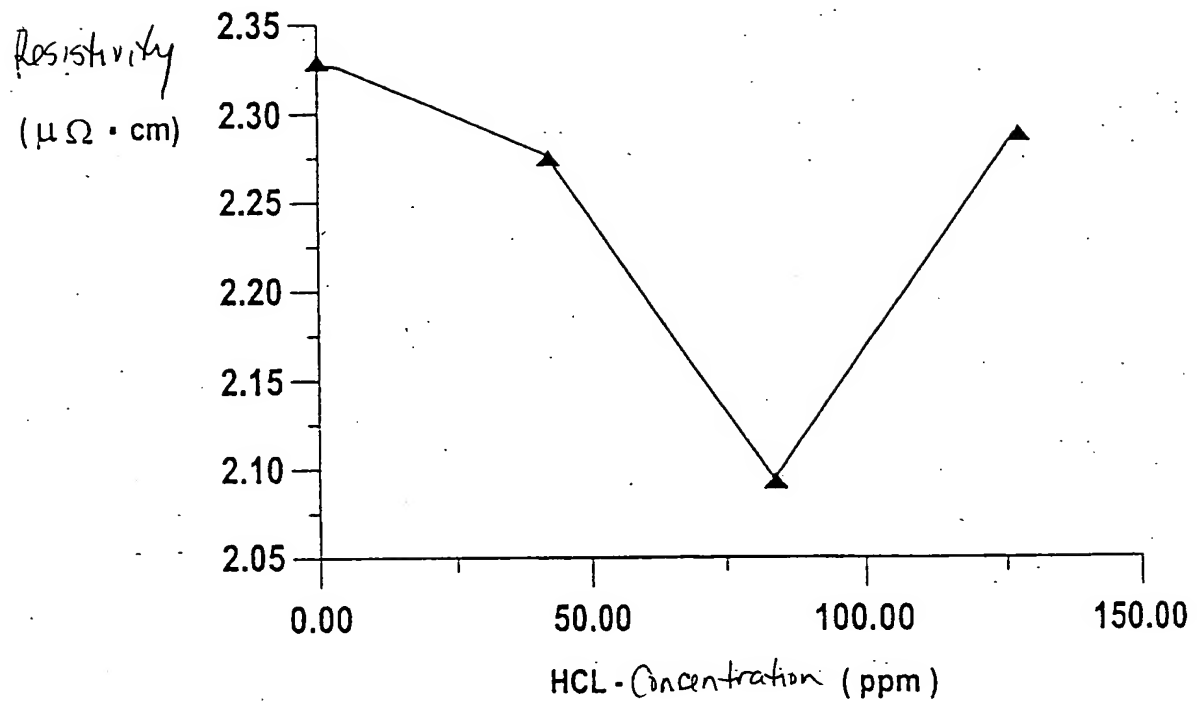
13/32

Fig. 14



14 / 32

Fig. 15



15 / 32

Fig. 16a

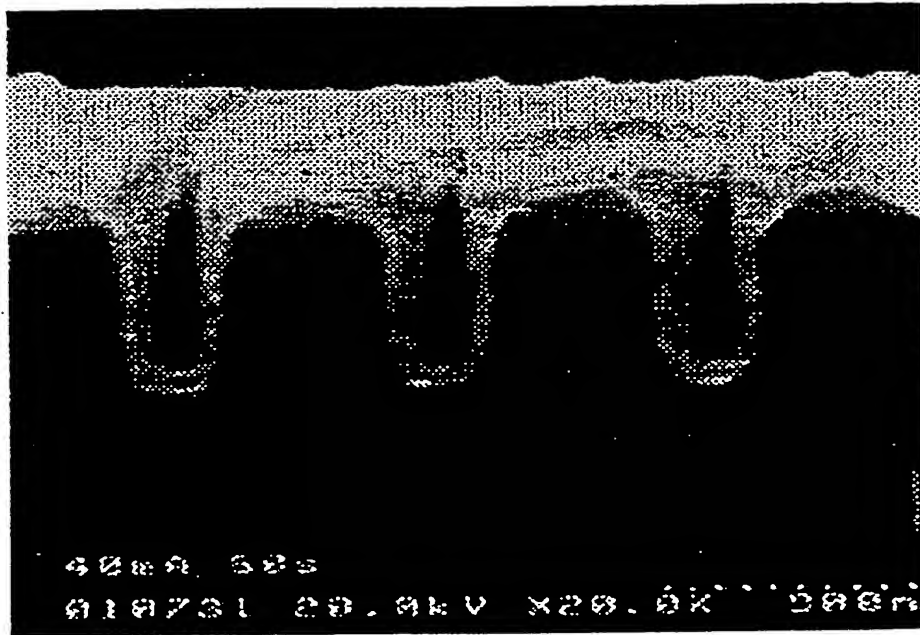
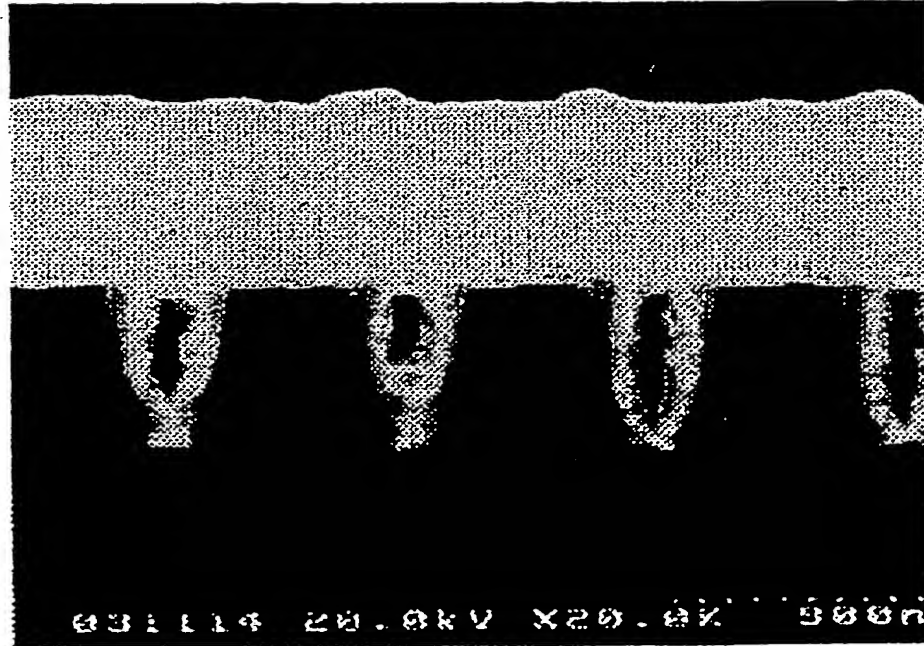
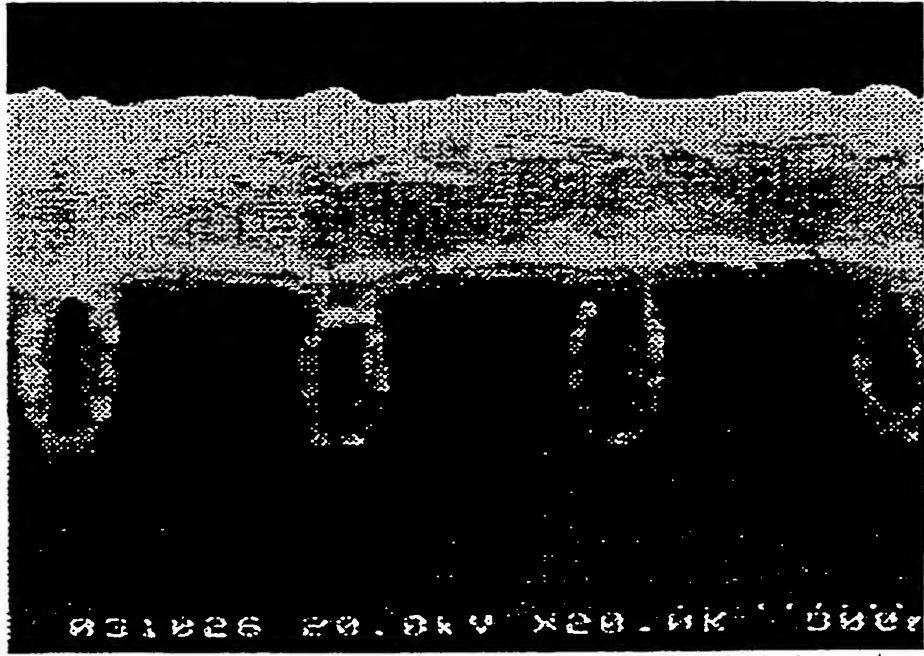


Fig. 16b



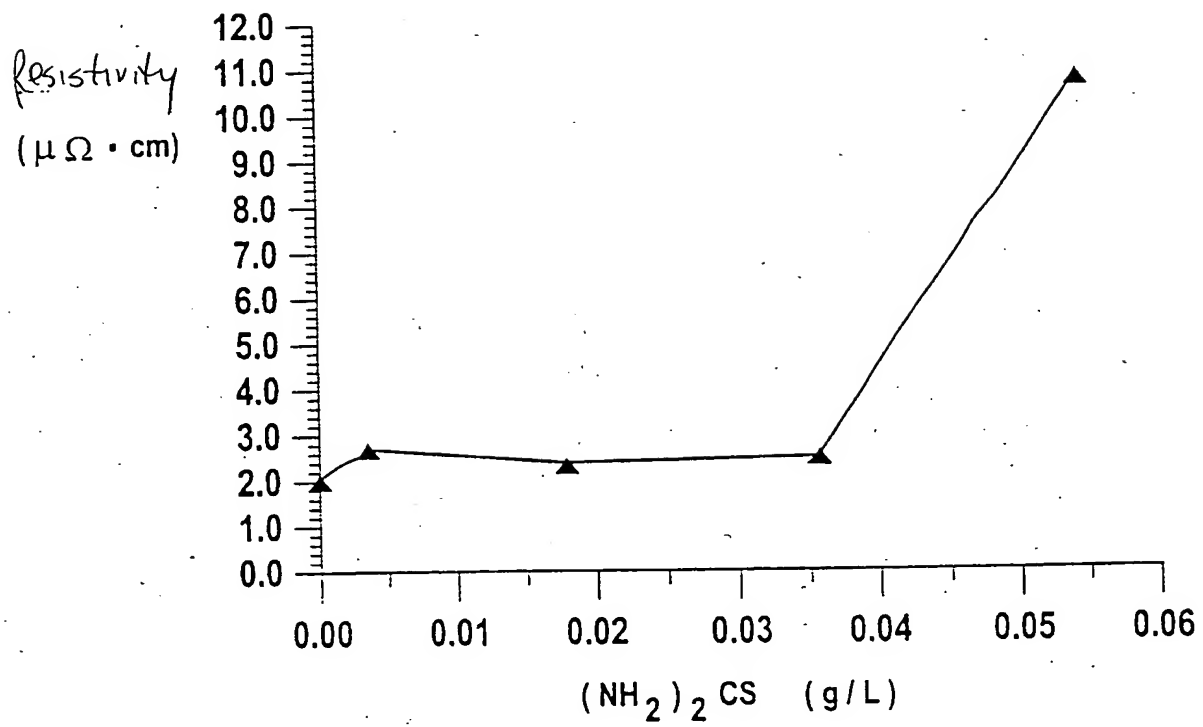
16 / 32

Fig. 17



17 / 32

Fig. 18



18 / 32

Fig. 19

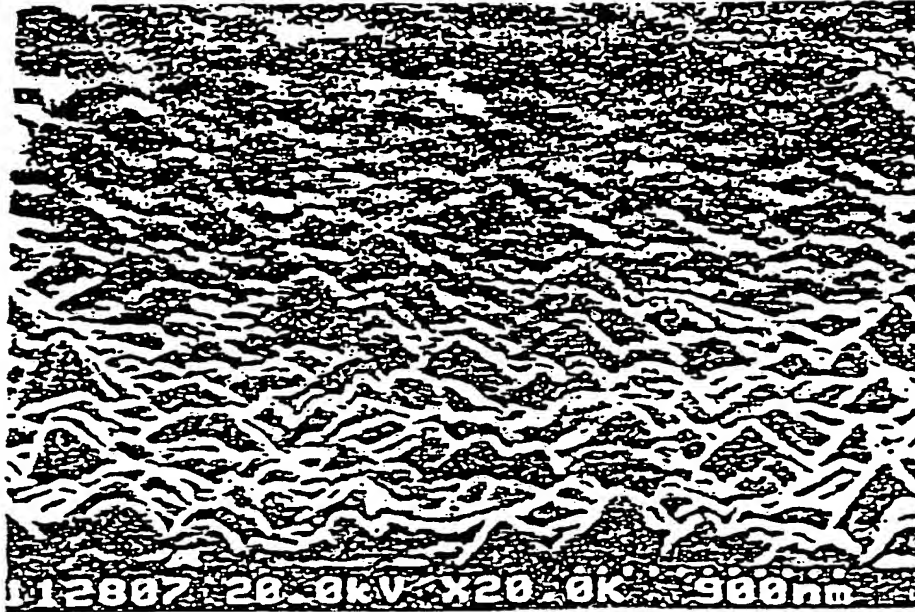
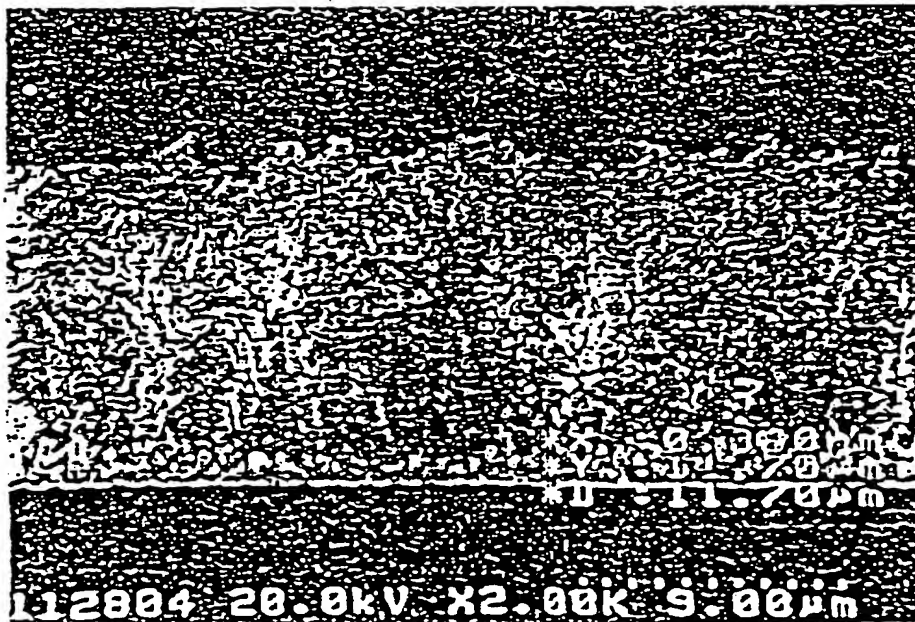
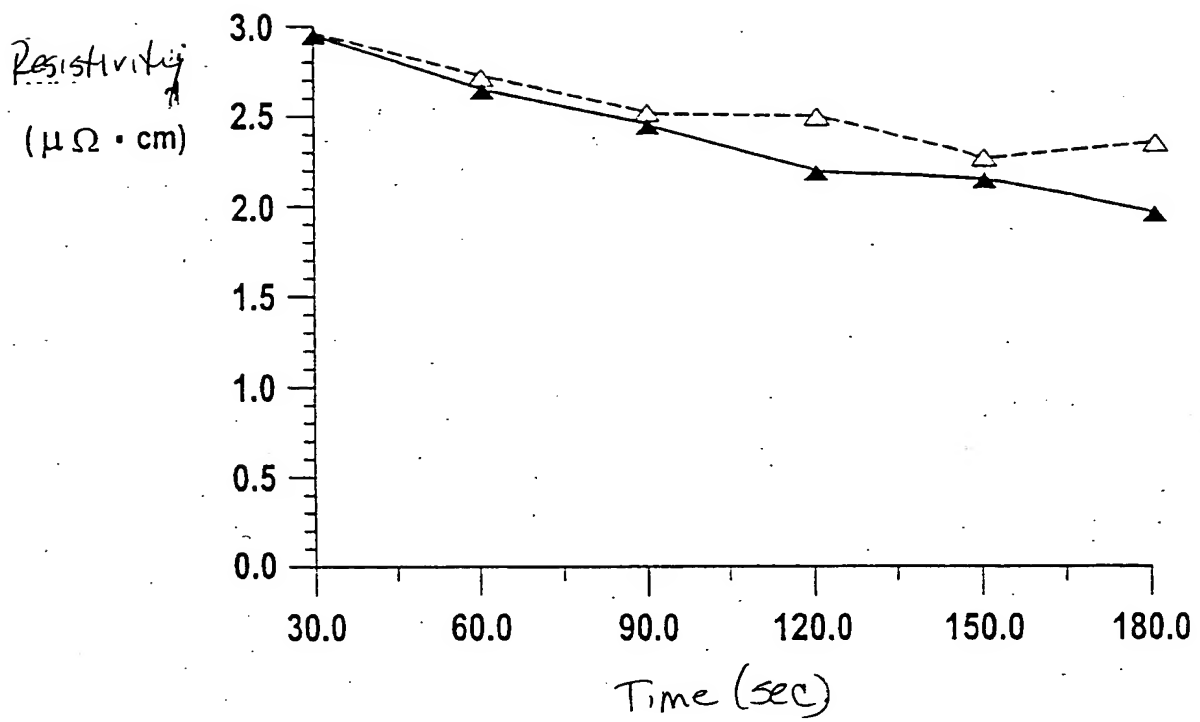


Fig. 20



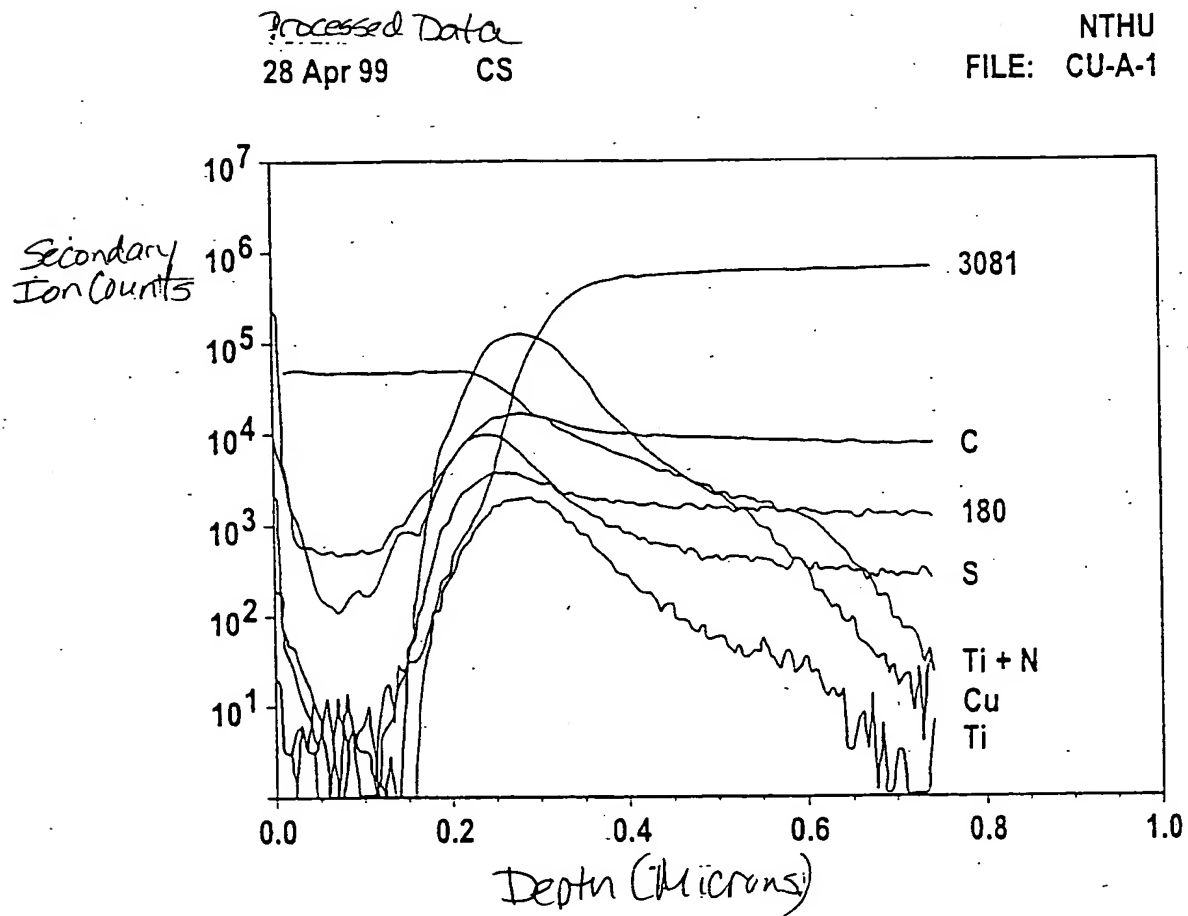
19 / 32

Fig. 21



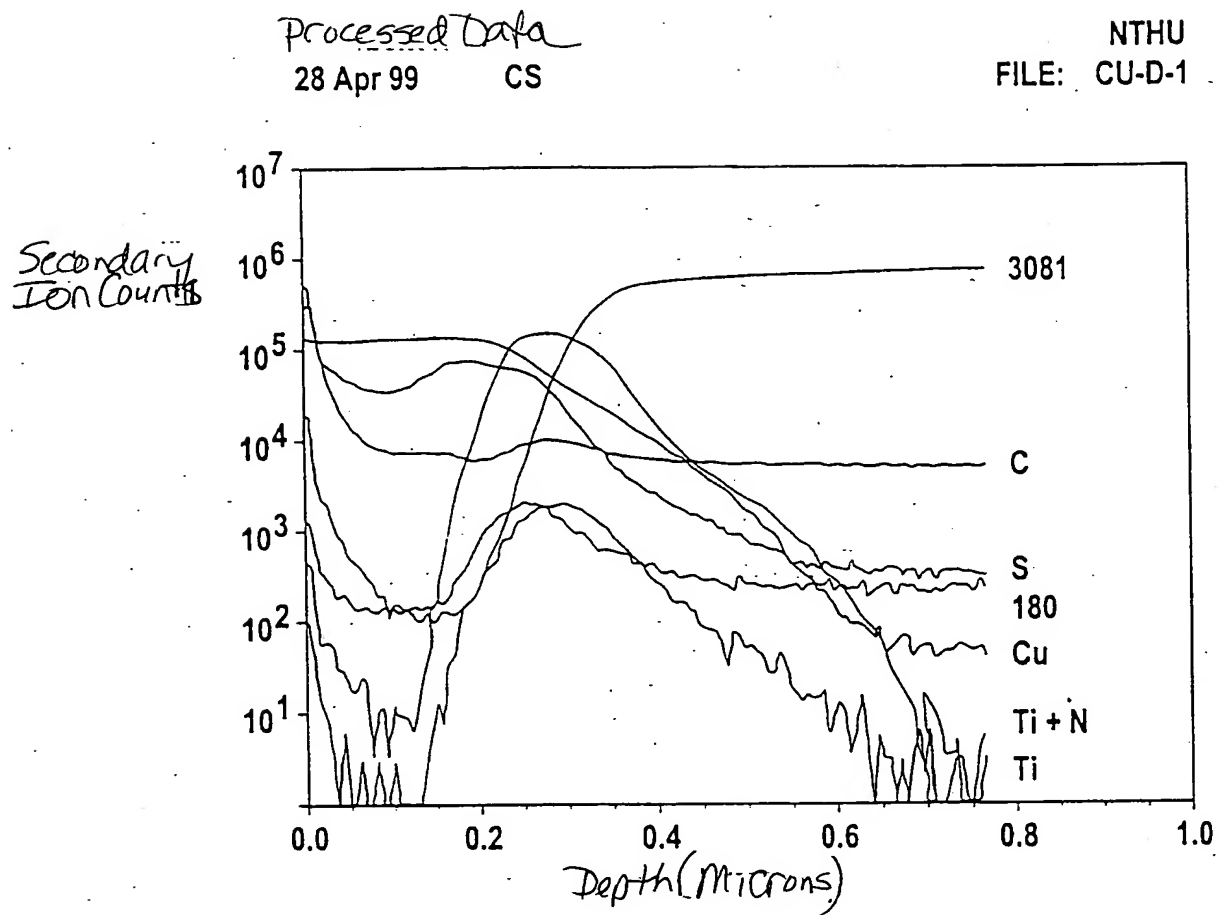
20 / 32

Fig. 22a



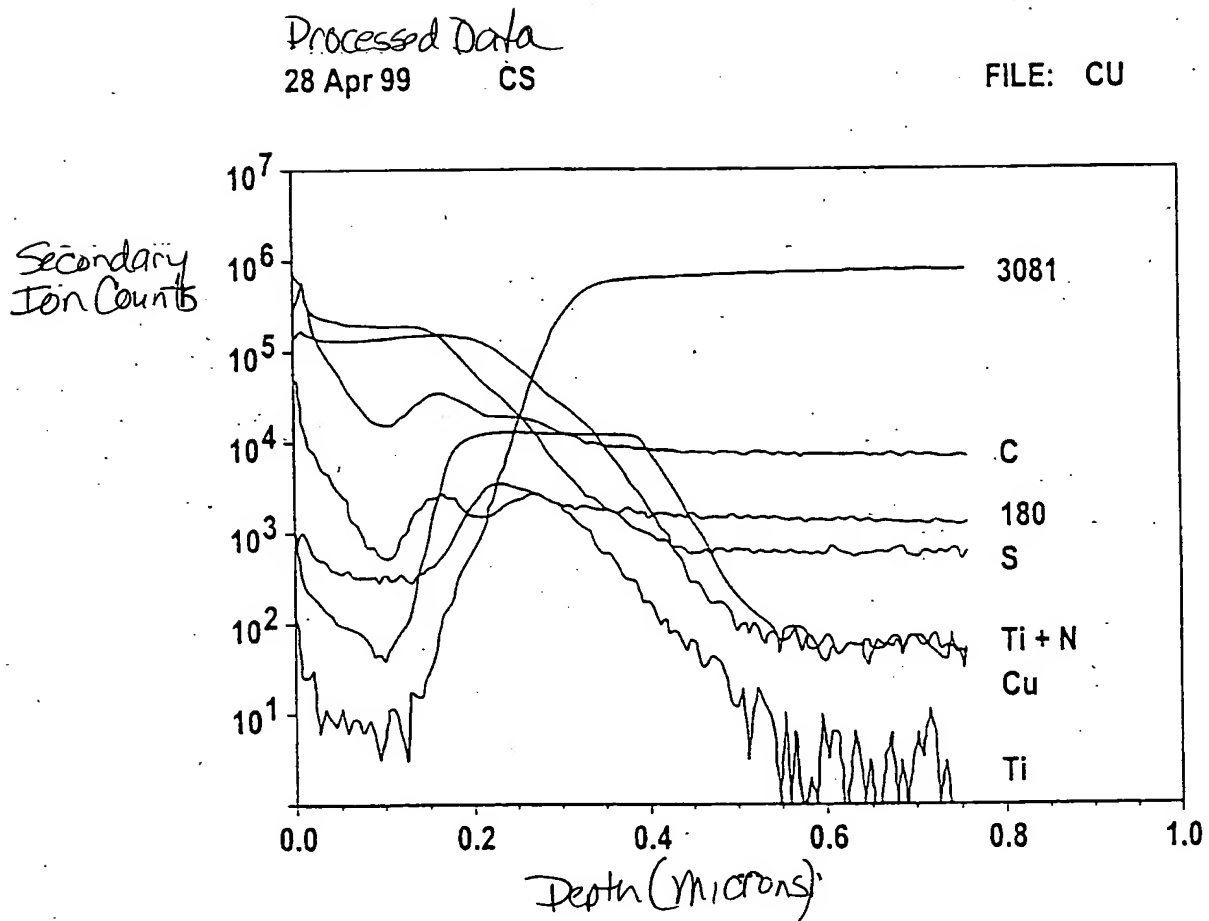
21 / 32

Fig. 22b



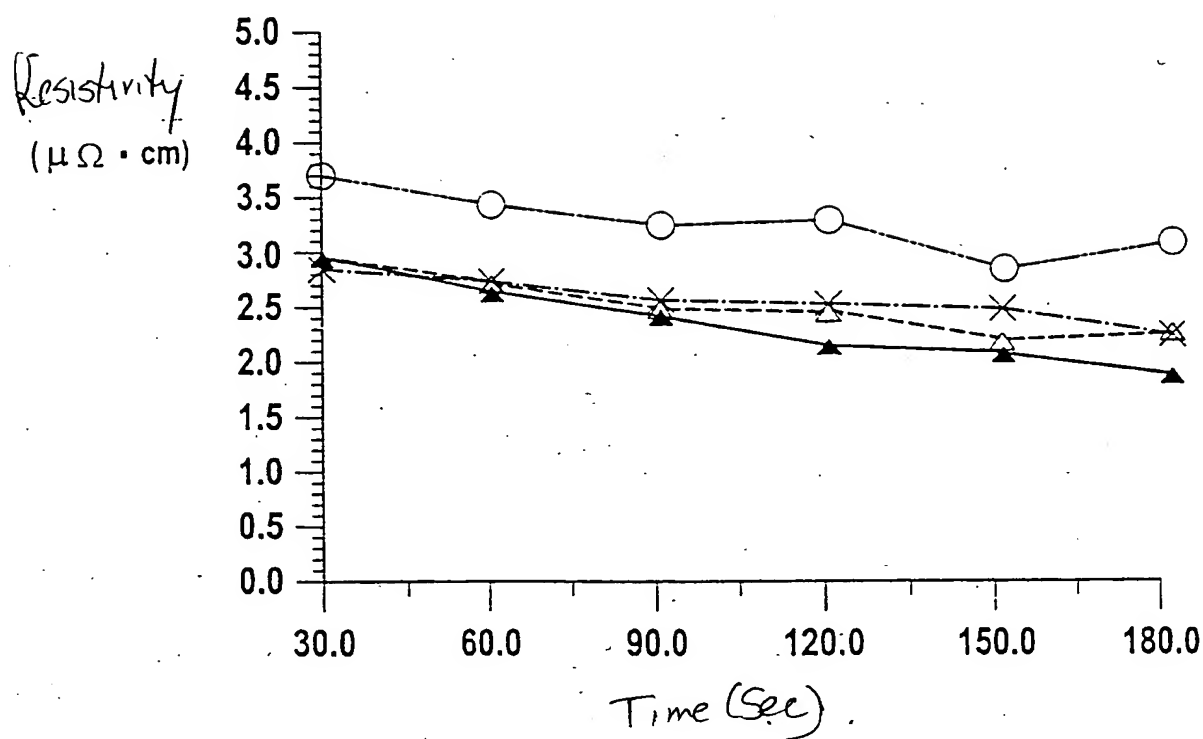
22 / 32

Fig. 22c



23 / 32

Fig. 23



- ▲ without additive agent
- △ 0,0036 g/L  $(\text{NH}_2)_2$  CS und PEG200
- × 0,0036 g/L  $(\text{NH}_2)_2$  CS und PEG1000
- 0,0036 g/L  $(\text{NH}_2)_2$  CS und PEG4000

24 / 32

Fig. 24a

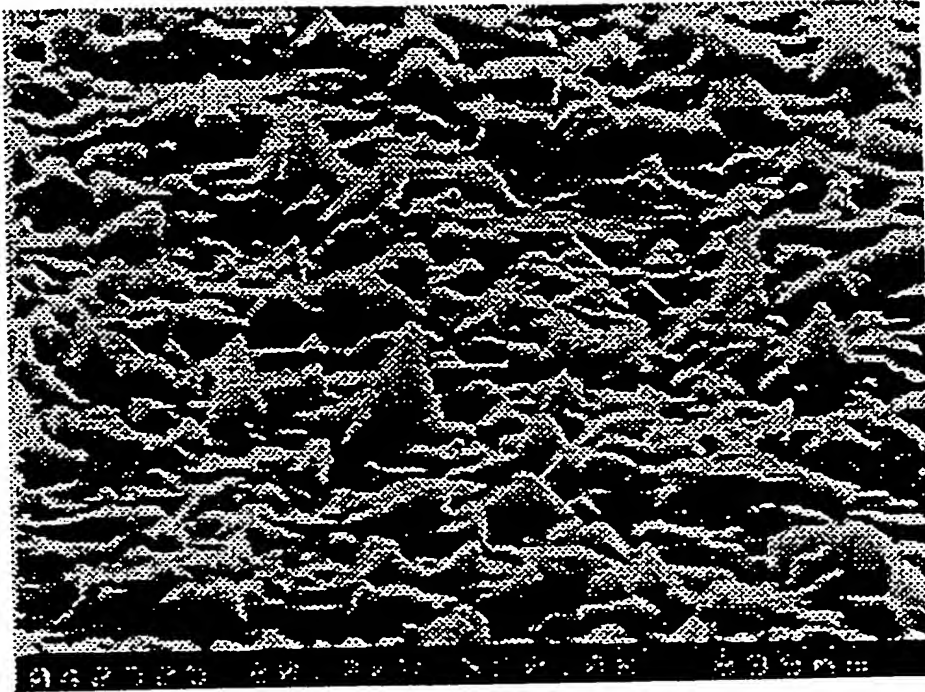
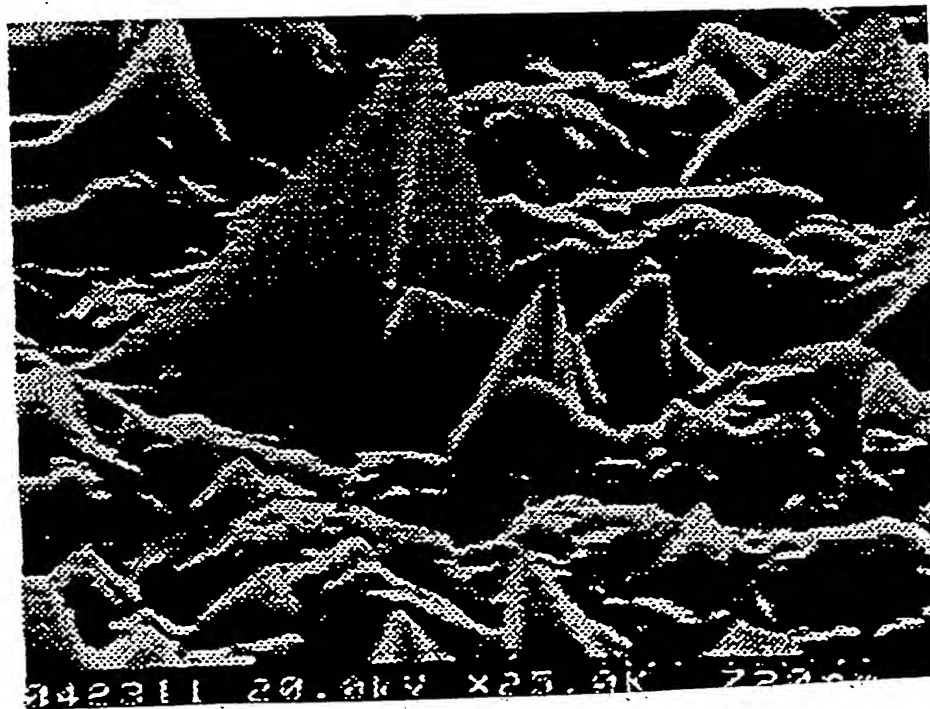
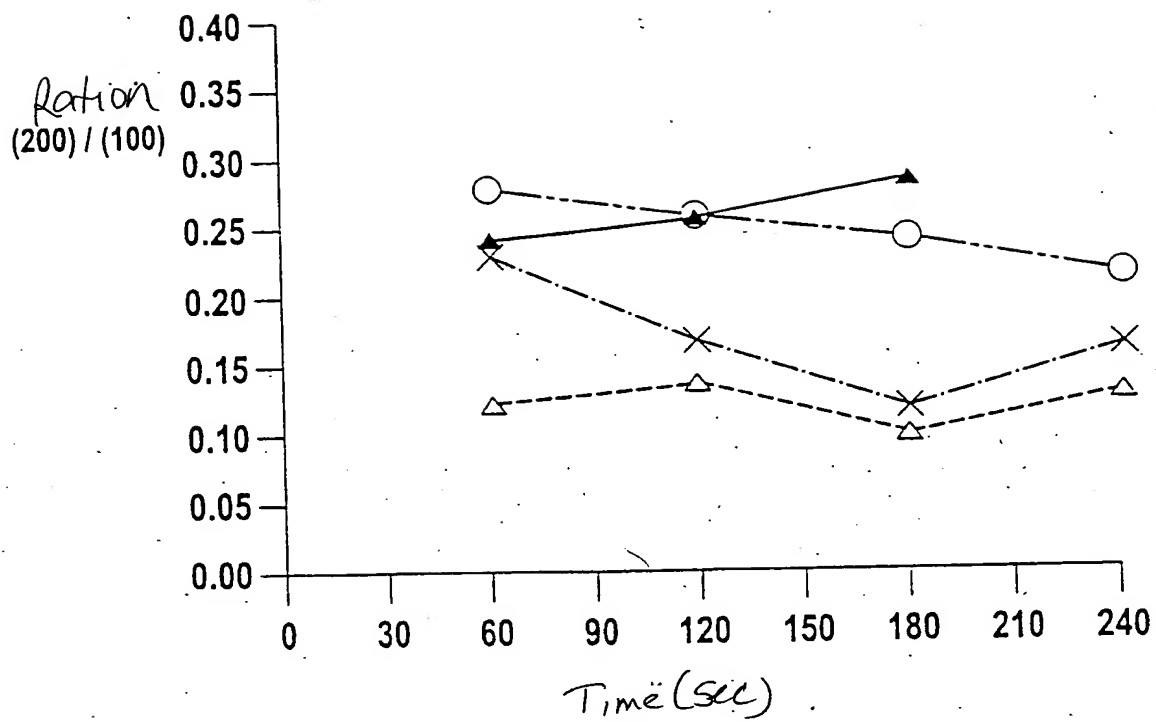


Fig. 24b



25 / 32

Fig. 25

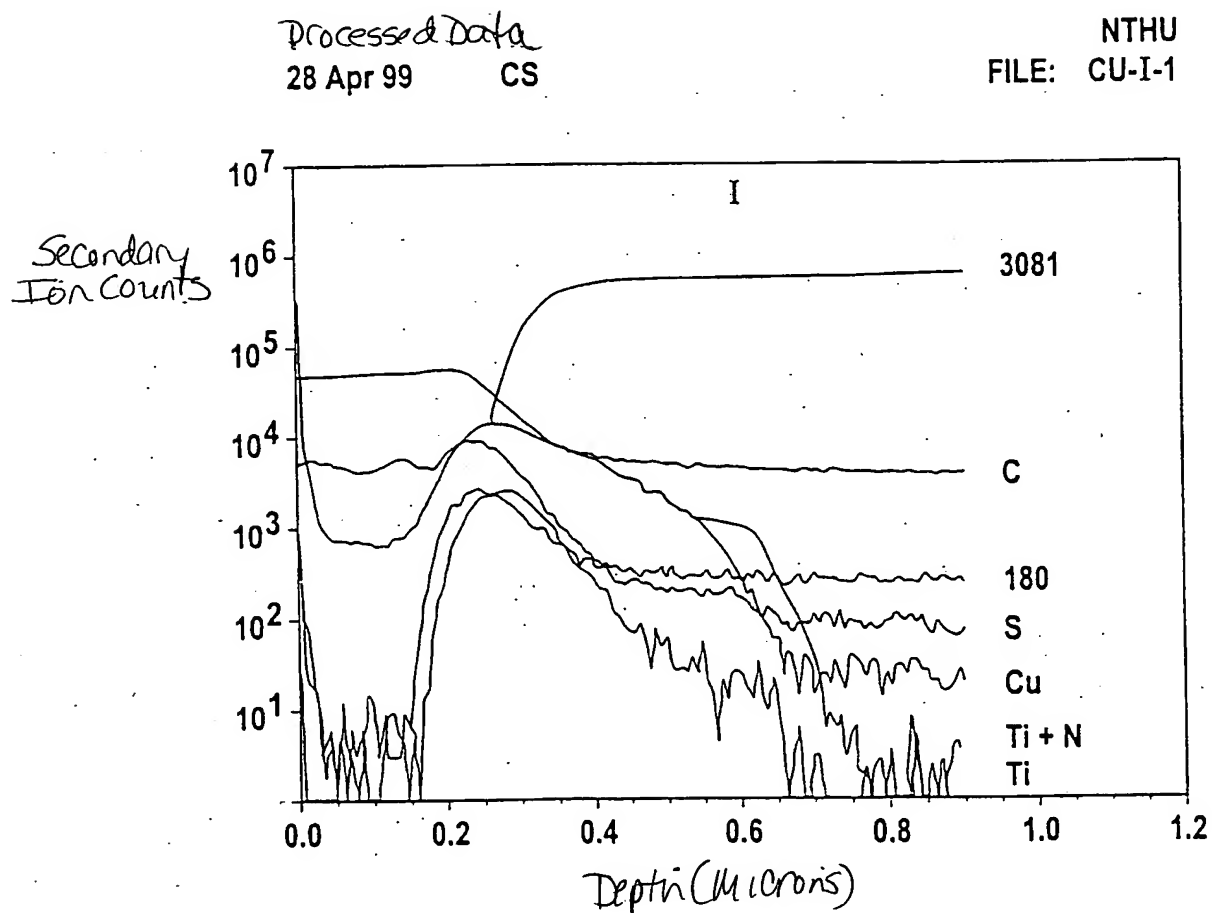


▲ S.T.D

△ (NH<sub>2</sub>)<sub>2</sub>CS<sub>1</sub> + PEG200× (NH<sub>2</sub>)<sub>2</sub>CS<sub>1</sub> + PEG1000○ (NH<sub>2</sub>)<sub>2</sub>CS<sub>1</sub> + PEG4000

26 / 32

Fig. 26a

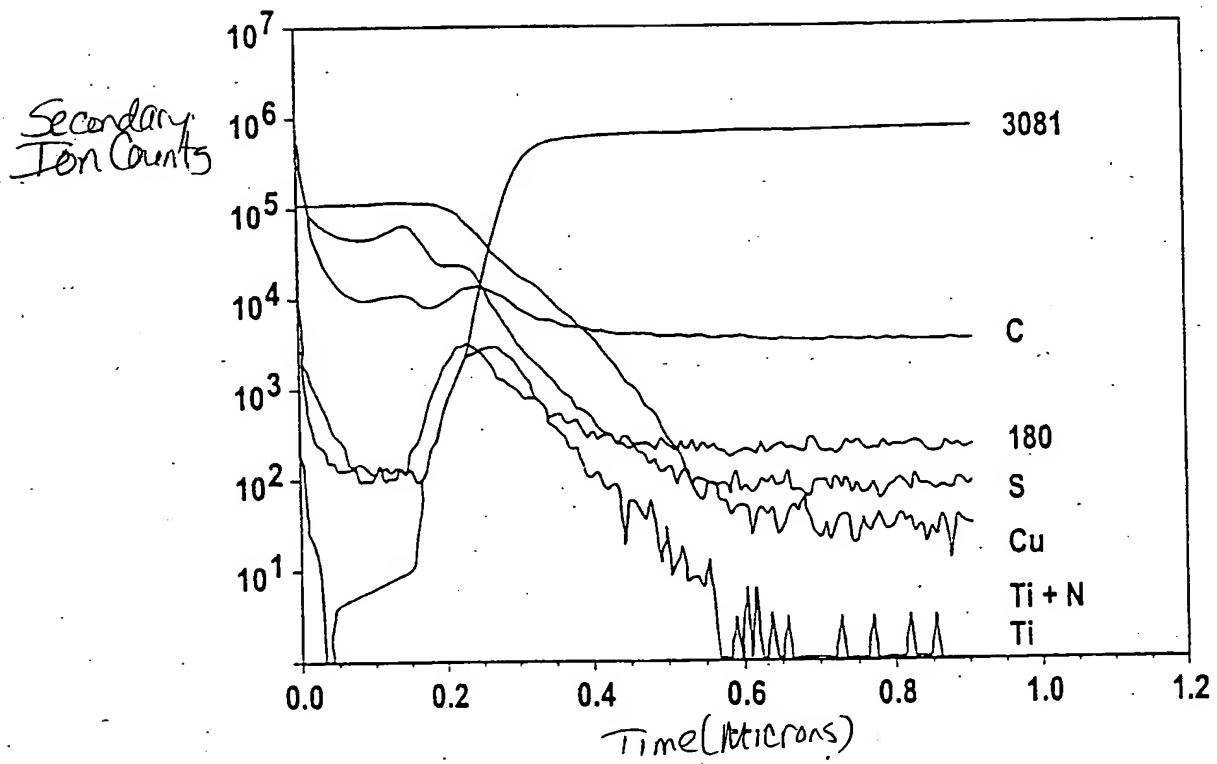


27 / 32

Fig. 26b

*Processed Data*  
28 Apr 99 CS

NTHU  
FILE: CU-I-2



28 / 32

Fig. 27

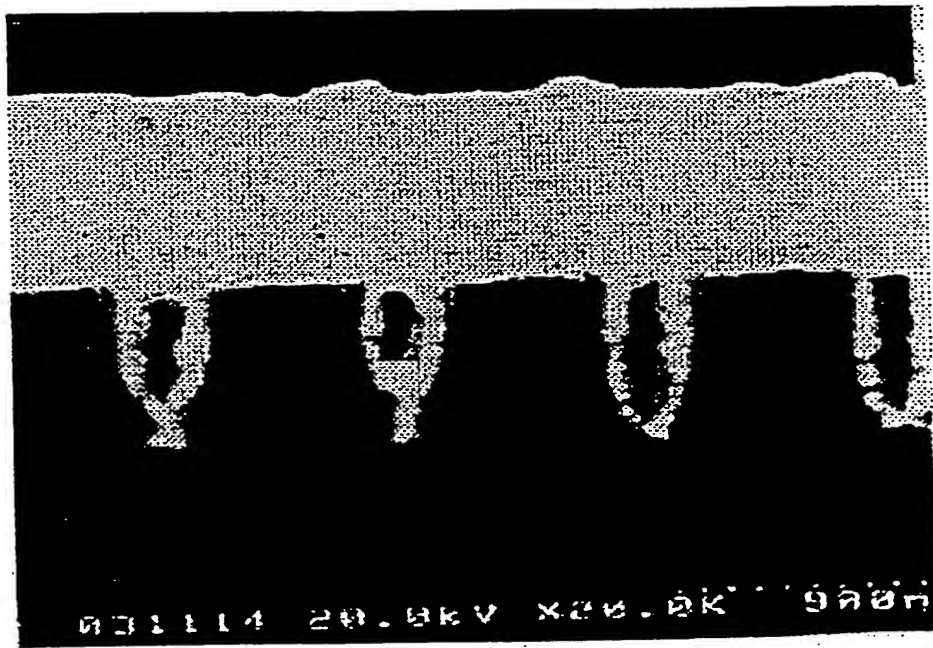


Fig. 28



29 / 32

Fig. 29a

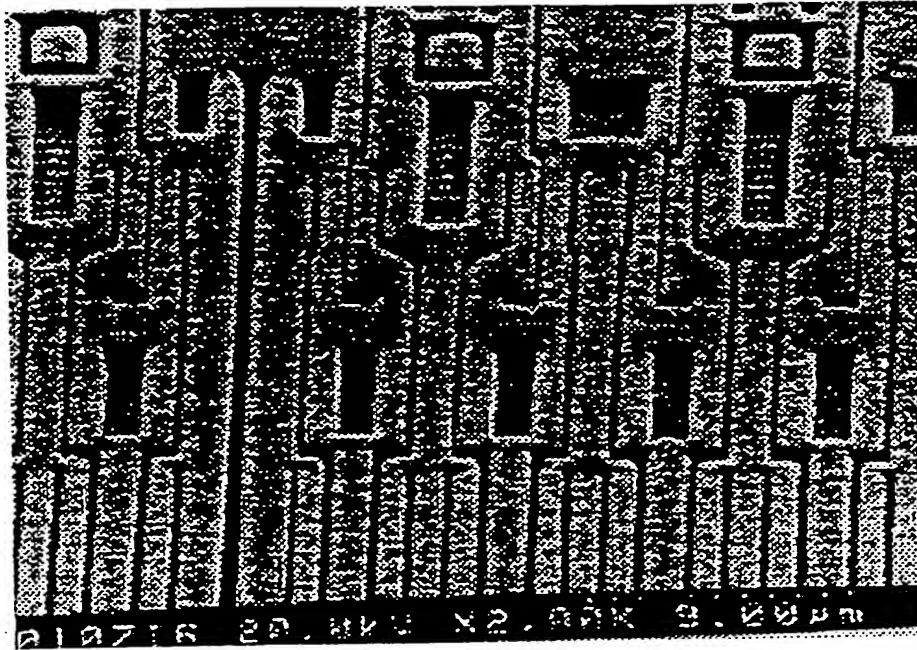
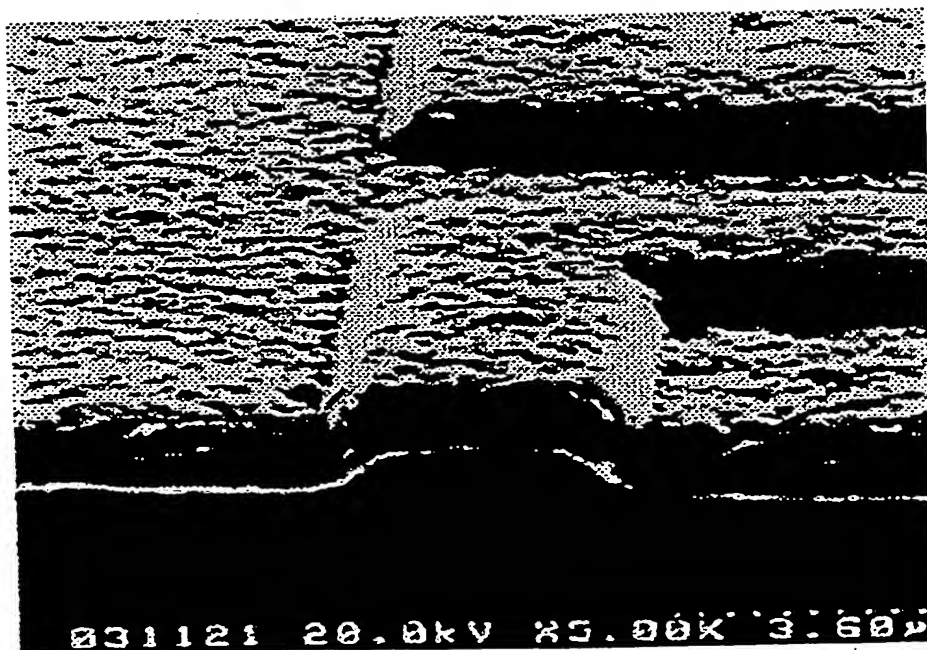
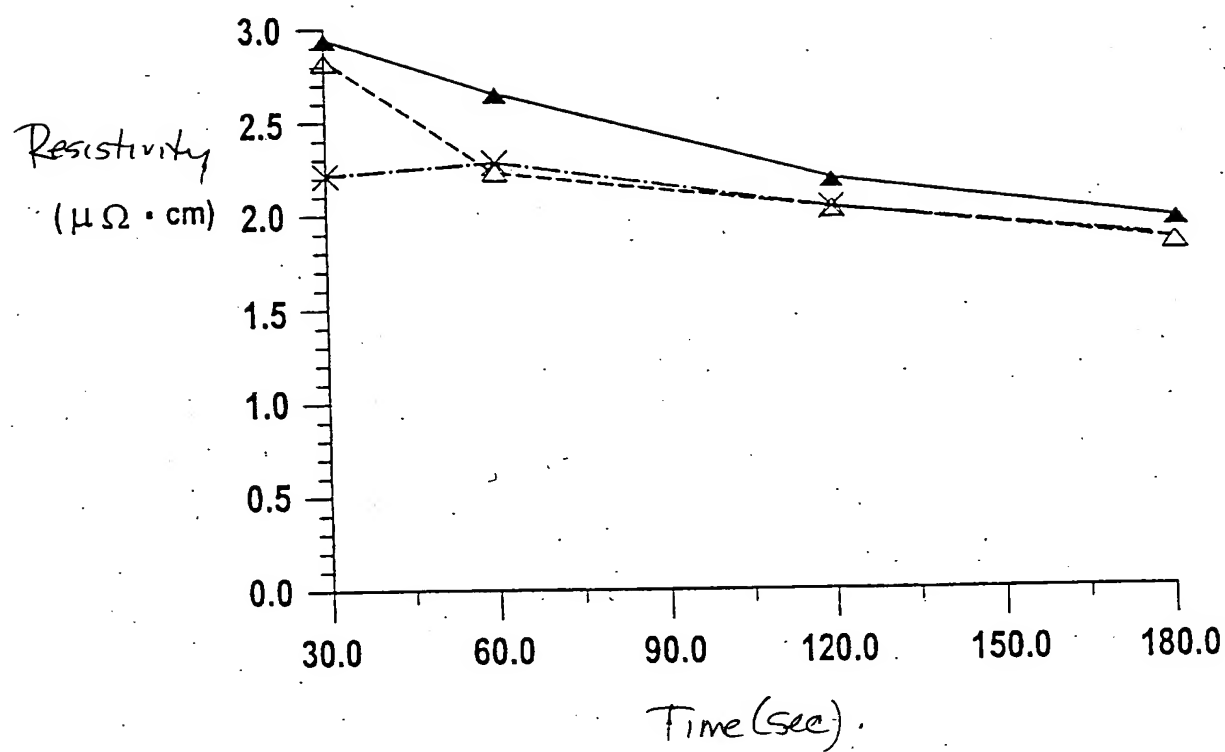


Fig. 29b



30 / 32

Fig. 30



- ▲ without additive agent
- △ with  $(\text{NH}_2\text{OH})_2 \cdot \text{H}_2\text{SO}_4$
- × with  $\text{NH}_2\text{OH} \cdot \text{HCl}$

31 / 32

Fig. 31

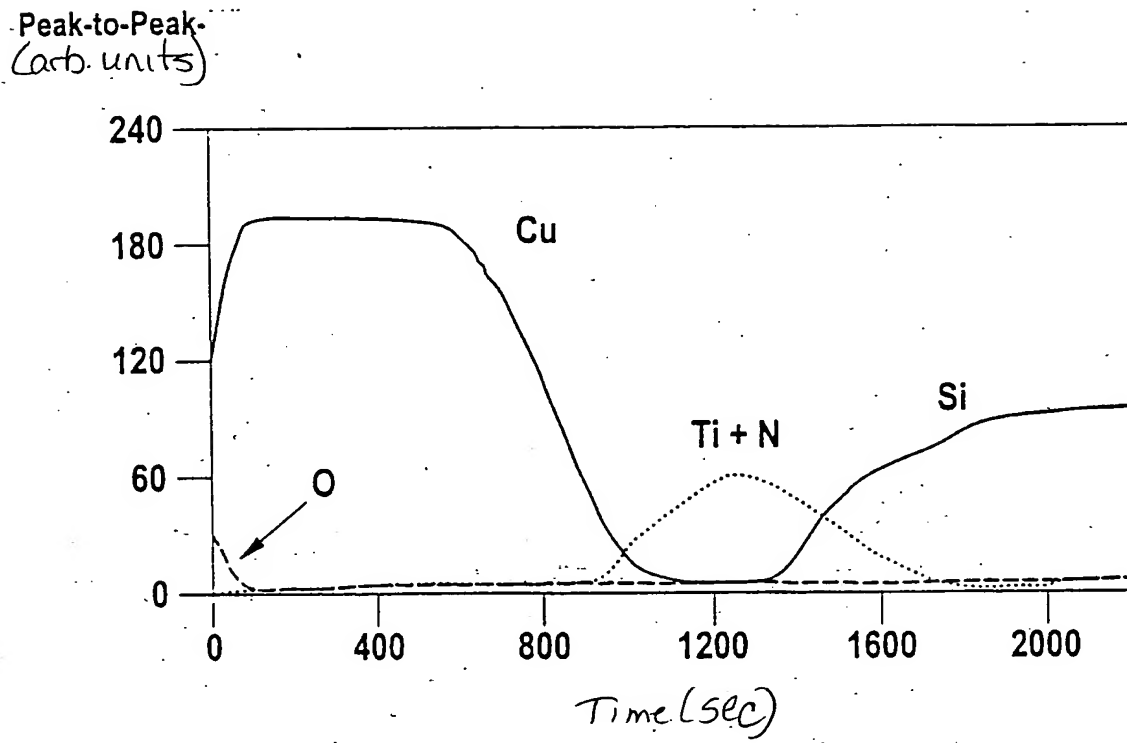




Fig. 32

